

WUP  
595.7  
M135

# THE BEE AND EVOLUTION

A STUDY IN ENTOMOLOGY

BY

RT. REV. ALEX. MACDONALD, D.D.  
BISHOP OF VICTORIA,  
Victoria, B. C.

## CONTENTS

PART I.—*The Book of Nature  
and the Book of Genesis.*

PART II.—*Reason and Instinct.*

WILLOWS PRESS

2050 HAULTAIN STREET  
VICTORIA, B. C.

# THE BEE AND EVOLUTION

A STUDY IN ENTOMOLOGY

BY

RT. REV. ALEX. MacDONALD, D.D.  
BISHOP OF VICTORIA,  
Victoria, B. C.

## CONTENTS

PART I.—*The Book of Nature  
and the Book of Genesis.*

PART II.—*Reason and Instinct.*

WILLOWS PRESS

2050 HAULTAIN STREET  
VICTORIA, B. C.

MUP

595.7

M135

## FOREWORD

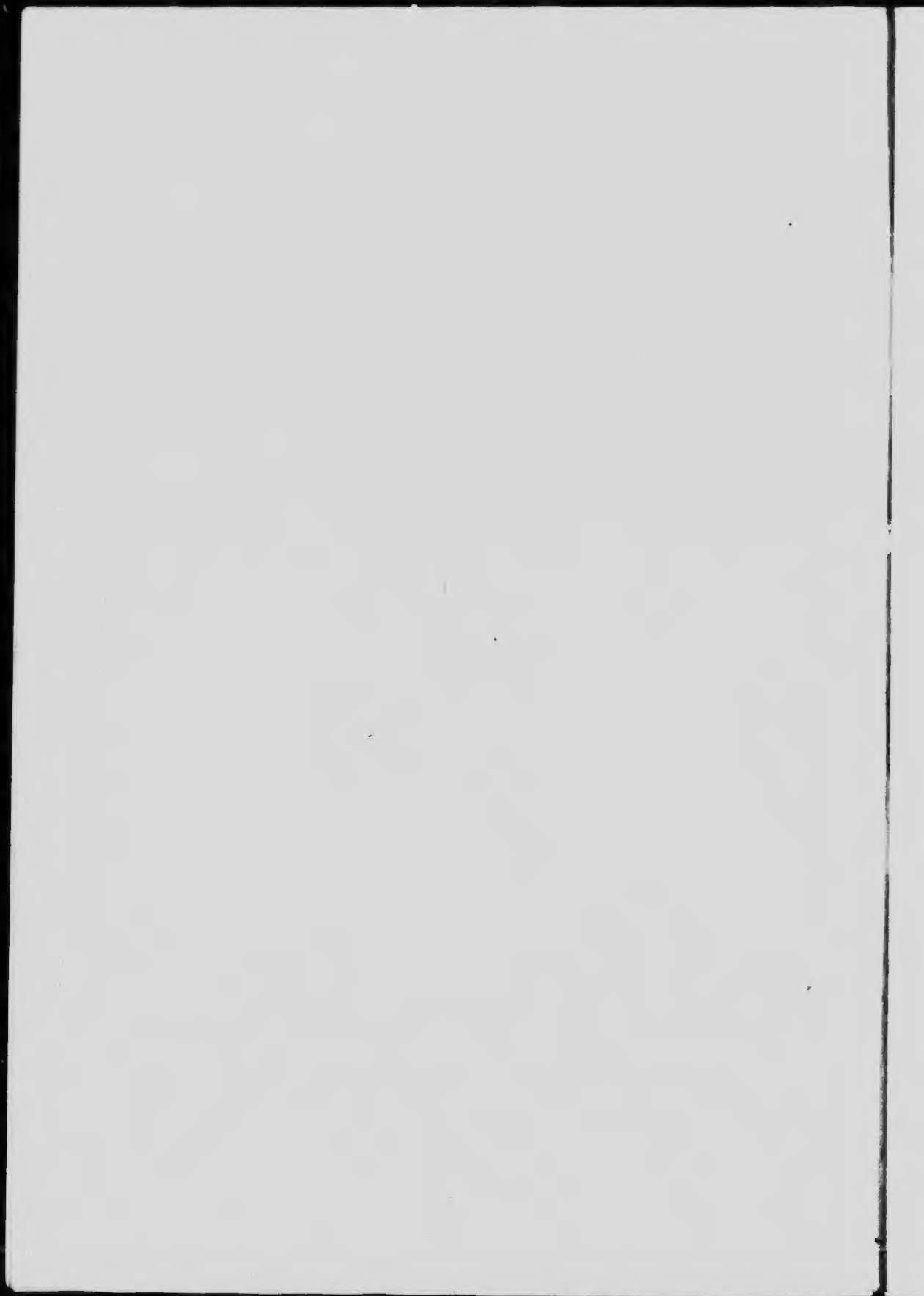


J. Henri Fabre was born in the early twenties of last century, and died in the second year of the Great War. He gave his whole long life to exploration and experiment in one small department of nature—the insect world. This, with his inborn aptitude for the study, made him the greatest entomologist the world has ever known. I am satisfied that his writings supply ample data for the confutation of the doctrine of evolution. This little work is a first essay in that direction.

VICTORIA B. C.

Nov. 13, 1919.

155761



## PART I

### The Book of Nature and the Book of Genesis

In the course of a preface to "The Life of the Spider" by the famous French entomologist, J. Henri Fabre, Maurice Maeterlinck observes that Fabre does not attempt to solve the riddles of nature "by one of those generally-acceptable theories such as that of evolution, which merely shifts the ground of the difficulty, and which emerges from these volumes in a somewhat sorry plight, after being sharply confronted with incontestable facts." It is the purpose of the present booklet to set forth certain of these facts, and to discuss their bearing on the origin of species.

Let me say at the outset that the researches of J. Henri Fabre in the field of entomology bid fair to bring natural science back into its true orbit, whence it strayed under Darwin and Huxley and Spencer in the last century. As the earth turns about the sun and thence draws its light and warmth, so does true science turn about the central truth that there is a God, Maker of heaven and earth and of all things. Without this Sun of existences all is darkness — an insolvable enigma to be everlastingly given up.

\* \* \*

Of the denizens of the insect world easily the most interesting is the bee. It has long been an

inhabitant of our planet. Thousands of years ago man succeeded in domesticating the little creature, or, at any rate, certain varieties of it, and ever since it has slaved for him, making honey not for itself, as Virgil has it.

*Sic vos non vobis mellificatis, apes.*

But, however remote, there was a time when the first bee appeared upon the earth, when the first honey was made, when the first hive was built.

How, then, did the bee come into existence? The great majority of natural scientists since the days of Darwin answer: By process of evolution from pre-existing species. "It has come to be mostly believed by naturalists," says St. George Mivart (*On Truth*, p. 12), "that new species—new kinds of animals and plants—have from time to time arisen from antecedent kinds, which were different, by a process of natural generation." Now, by the very terms of the question, the antecedent kinds could not have possessed the special characteristics of the bee, of which the salient ones are the faculty of extracting honey from flowers and the faculty of building a hive. These are peculiar to the bee; no other creature on this earth possesses them. Evolution would thus involve a transformation of species, of which Fabre has this to say in his work on the *Mason-Bees*:

"The transformists dogmatize about the past and dogmatize about the future, but as seldom as possible talk to us about the present. Transformations have taken place, transformations will take place; the pity of it is that they are not actually taking place. Of the three tenses one is lacking, the very

one which directly interests us and which alone is clear of the incubus of theory. This silence about the present does not please me overmuch, scarcely more than the famous picture of *The Crossing of the Red Sea* painted for a village chapel. The artist had put upon the canvas a broad ribbon of brightest scarlet; and that was all.

"'Yes, that's the Red Sea,' said the priest, examining the masterpiece before paying for it. 'That's the Red Sea, right enough; but where are the Israelites?'"

"'They have passed,' replied the painter.

"'And the Egyptians?'"

"'They are on the way.'"

"Transformations have passed, transformations are on the way. For mercy's sake cannot they show us transformations in the act? Must the facts of the past and the facts of the future necessarily exclude the facts of the present? I fail to understand."—*Ib.* pp. 243-244.

The fact of the past, or rather the assumption, as it affects the bee, is that it was evolved from an organism which neither made honey nor built a hive. The fact of the future, in like manner assumed by the evolutionist, is that the bee will in process of time be transformed into an organism specifically unlike the existing honey-maker and hive-builder. The fact of the present is that the bee is the only living organism that makes honey and builds a hive. How long has this been so? Ever since the bee appeared upon the earth. And how long is it since then? God only knows. Modern science would readily grant millions of



years, for the bee is comparatively low in the line of supposed descent. At any rate there is ample time to allow of the assumed fact of the future showing some incipient sign of coming to pass. Is there such sign? No, not a vestige of one.

But, what is more, the facts established by Fabre go to show that the bee must forever remain essentially such as it is today. By instinct the bee builds its hive; by instinct the bee selects the element of honey from flowers; by instinct the bee does everything that it does. And this instinct is absolutely unprogressive, absolutely limited in its range, and absolutely fixed and unchanging as is the law of gravitation or the movement of the planets. The bee, of itself, can no more cease to make honey than the sun can cease to shine; it can no more change its way of making honey, or its way of building its hive, than the earth can change its orbit. Why so? Because it lacks intelligence to plan anew, or devise new ways of doing what it does; and because it lacks freedom of choice, and is impelled to act by a law of its nature, which, like all the laws of nature, is inexorable and unchanging.

And now for the facts. Fabre made a hole in the cell of the Mason-bee while the little creature was still engaged in building. The bee hastened to stop the breach. "She was busy building and turned aside a moment to do more building. Her repairs are the continuation of the work on which she was engaged."<sup>1</sup> The experimenter made a hole in the bottom of the cell after the bee had begun the work of provisioning. The bee observed the hole but

---

<sup>1</sup> *The Mason-Bees*, p. 170.

went on with its work and let the honey ooze through. "Once the provisioning begins the cup [of the cell] is finished for good and all; and come what may the insect will not touch it again. The harvester will go on harvesting though the pollen trickle to the ground through the drain. To plug the hole would imply a change of occupation of which the insect is incapable for the moment. It is the honey's turn and not the mortar's. The rule upon this point is invariable. A moment comes, presently, when the harvesting is interrupted and the building is resumed. The edifice must be raised a story higher. Will the Bee, once more a mason, mixing fresh cement, now attend to the leakage at the bottom? No more than before. What occupies her at present is the new floor, whose brickwork would be repaired at once if it sustained a damage; but the bottom story is too old a part of the business; it is ancient history; and the worker will not put a further touch to it, even though it be in serious danger."<sup>a</sup>

Our experimenter varies his experiment: "Lastly, I stick into the paste a bit of straw nearly an inch long and standing well out above the rim of the cell. The insect extracts it by dint of great efforts, dragging it away from one side; or else, with the help of its wings, it drags it from above. It darts away with the honey-smeared straw and gets rid of it, at a distance, after flying over the plane-tree.

"This is where things begin to get complicated. I have said that when the time comes for laying, the Mason-bee arrives with a pellet of mortar wherewith immediately to make a door to the

---

<sup>a</sup> *Ib.* p. 177.

house. The insect, with its front legs resting on the rim, inserts its abdomen in the cell; it has the mortar ready in its mouth. Having laid the egg, it comes out and turns round to block the door. I wave it away for a second, at the same time planting my straw as before, a straw sticking out for nearly a centimetre (.39 inch).

"What will the Bee do? Will she, who is so scrupulous in ridding the home of the least mote of dust, extract the beam which would certainly prove the larva's undoing by interfering with its growth? She could, for just now we saw her drag out and throw away, at a distance, a similar beam.

"She could and she doesn't. She closes the cell, cements the lid, seals up the straw in the thickness of the mortar. More journeys are undertaken, not a few, in search of the cement required to strengthen the cover. Each time, the mason applies the material with the most minute care, while giving the straw not the least thought. In this way I obtain, one after the other, eight closed cells whose lids are surmounted by my mast, a bit of protruding straw. What evidence of obtuse intelligence!"<sup>\*</sup> \* \* \*

"If one sees a rudiment of reason in this Hymenopteron intelligence, he has eyes that are more penetrating than mine. I see nothing in all this but an invincible persistence in the act once begun. The cogs have gripped; and the rest of the wheels must follow. The mandibles are fastened on the pellet of mortar; and the idea, the wish to unfasten them will never occur to the insect until the pellet has fulfilled its purpose. And here is still a greater

<sup>\*</sup> Ib. 181-183.

absurdity: the plugging once begun is very carefully finished with fresh relays of mortar. Exquisite attention is paid to a closing-up which is henceforth useless; no attention at all to the dangerous beam. O little gleams of reason that are said to enlighten the animal, you are very near the darkness, you are naught." The author has just described in detail the work of the Mason-bee in plugging the door, after the egg has been laid. "No matter that the larva will perish by this untimely trowelling: the moment has come to wall up the door; the door is walled up."<sup>4</sup>

Once again, our experimenter drains away the honey, from one cell in part, from another wholly; but when the time comes for laying the egg, the bee lays it whether there is honey in the cell or not. "The inference is obvious; the Bee does not judge of the quantity of honey by the elevation of the surface; she does not reason like a geometrician, she does not reason at all. She accumulates so long as she feels within her the secret impulse that prompts her to go on collecting until the victualling is completed; she ceases to accumulate when that impulse is satisfied, irrespective of the result, which in this case happens to be worthless. No mental faculty, assisted by sight, informs her when she has enough, when she has too little. An instinctive predisposition is her only guide, an infallible guide under normal conditions, but hopelessly lost when subjected to the wiles of the experimenter. Had the bee the least glimmer of reason, would she lay her egg on the third, on the tenth part of the necessary provender? Would she lay it in an empty cell?

<sup>4</sup> *Ib.* pp. 184-185.

Would she be guilty of such inconceivable maternal aberration as to leave her nursling without nourishment? I have told the story; let the reader decide."<sup>5</sup>

One more experiment. The Mason-bee, when hatched and now full-grown, will pierce the mortar dome of its cell, but if you put a bit of paper covering some little distance above the dome, as Fabre did, the insect will not even try to make its way through. Instinct impels it to pierce the roof of its cell, but there stops short. "The Mason-bee perishes for lack of the smallest gleam of intelligence. And this is the singular intellect in which it is the fashion nowadays to see a germ of human reason! The fashion will pass and the facts remain, bringing us back to the good old notions of the soul and its immortal destinies."<sup>6</sup>

The bee is furnished with a proboscis for culling honey from the flowers. It is fitted by nature with a faculty which serves a definite purpose. It must needs, then, continue to do what it does. The bee builds its hive with wonderful art. But its art is rigidly limited to the building of a hive. It can do no other work of art nor can it vary its way of doing its one work, though it may modify it according to the materials that are available and the environment. It must needs, then, go on building its hive in essentially the same way. The bee by an instinct of its nature deposits in each cell which it has stocked with honey an egg out of which is hatched another bee, and never by any chance any other sort of creature. The bee, therefore, perpetuates its

<sup>5</sup> *Ib.* pp. 187-188.

<sup>6</sup> *Ib.* p. 39.

kind, and cannot choose but go on perpetuating its kind evermore. And so it must remain evermore what it is—a bee. It has an inherent incapacity of changing itself into another species of insect. Conformity to type is the law of its nature; transformation is by its nature banned and barred.

So much for the future of the species. But what of the past? Whence came the bee? How did the first bee come into existence? Had it come in the ordinary course of nature, it would have been hatched from an egg. *Omne vivum ab ovo* — Every living organism from a germ, is the law of nature, the law of biogenesis. That is to say, this is the generic law. The specific law is that each species of living organism comes from the germ of its own species. So, every bee since the first has been hatched from the egg of a pre-existing bee. But in the case of the first, there was no pre-existing bee. Hence it could not have been hatched.

Treating of the origin of the human body, St. Thomas says: "As no pre-existing body had been formed whereby another body of the same species could be generated, the first human body must needs have been made immediately by God." And again: "The natural generation of every species is from some determinate matter. Now the matter whence man is naturally begotten is human semen. Wherefore from any other matter an individual of the human species cannot naturally be generated. But God alone, the Author of nature, can bring a thing into existence outside the ordinary course of nature. Therefore God alone could produce either

---

1a., q. 91, a. 2.

, Ib. q. 92, a. 4.

a man from the slime of the earth, or a woman from the rib of a man."'

The same is true of the first bee: it must have been made immediately by God. God is the Author of the laws of nature. In the first institution of things, He established these laws. One of them is that **Like begets like**: each species propagates its kind. In the ordinary course of nature, you will never get a bee but from the egg of another bee. But might it not have been different in the case of the first bee? Might it not have come from the egg of another species? That it did is the assumption of the evolutionist. But it runs counter to nature's laws. These were in force before the first bee was born. The pre-existing species whence the bee is supposed to have been evolved was itself subject to the specific law of biogenesis, **Like begets like**. From the germ of that species only an organism of the same species could, in the ordinary course of nature, have been generated.

Nor can it be said that the germ whence the first bee came may have been the product of the crossing of two species. For, such hybrid forms are either sterile or revert to one or other of the original types. Now the bee is ever fertile and certainly no hybrid form. In the second place, a cross between two "good" species always is a blend of the two, sharing the characteristics of both. But the characteristics of the bee are, as we have observed, its faculty of making honey and its faculty of building a hive, and these two are so bound up together that they could not be found separate in the supposed antecedent species, seeing that the very purpose of the hive is to serve as a receptacle for honey.

Let the reader bear steadily in mind that if the bee had had its origin in the ordinary course of nature, (which the evolutionist has to assume, since he excludes the immediate operation of the Author of nature), it would necessarily have come from an egg; for nature knows of no other way in which any living creature comes into existence. The difficulty, then, remains: How could the first bee have come from other than a bee-egg, since it is the law of nature that the bee comes from a bee's egg, and from no other?

But, even given the egg, there still are wanted honey and a cell to hatch it. In the course of nature the bee is never hatched save in a cell and never can grow unless fed with honey. Whence are these to come without a pre-existing bee? The faculty of making honey and the faculty of building cells are peculiar to the bee, although, in the case of certain varieties of the wild bee, it is not the mother-bee that immediately forms the cell: it forms itself about the young insect, similarly to the cocoon of the silk-worm. But, of course, the mother-bee is the real efficient cause of the formation of the cell, though not the direct and proximate. As the origin of the first bee is what we are seeking to account for, it is plain that, even given the egg, it could not be hatched. To suppose a pre-existing gatherer of honey and maker of cells is to suppose the very insect whose origin is in question.

Consider, again, that the first bee must have been equipped with an apparatus for gathering honey and an instinct for using it aright, i.e., for making a judicious selection of honey from among the many elements that are found with it in flowers. Why



so? Because honey is the food it feeds on and by which it rears its young. Nor could the need have created the faculty, in such wise that the bee would slowly acquire it and learn to use it aright; for the need presupposes the faculty, and the procuring of necessary food for itself and its offspring would brook no delay.

Whence, then, did the proboscis come, in the first bee, and the art of using it judiciously in gathering honey? These now come in the ordinary course of nature from parent bee to offspring: for every bee is born into the world with this apparatus, and no bee has to learn how to use it, but possesses the inborn predisposition to do so, which is known as instinct. As there is question of characteristics that are essential to the species and peculiar to it, they could not have come, in the ordinary course of nature, from creatures that did not themselves possess them, but must have come immediately from the Author of nature.

And there is yet another characteristic which must have come immediately from God. It is the faculty of making cells and building a hive. The hive of the common bee shows real architectural skill. Broadly speaking, with the minimum of material we have the maximum of capacity. To plan such a structure man would have to work out a difficult mathematical problem, which, of course, the bee never worked out. But no bee ever went about the task of building its hive at haphazard. Without having—hid away somewhere in its little brain—a plan of the hive, it would waste much wax and build nothing. So, man himself never achieves any-

thing without a plan and a fixed purpose. He may, indeed, pull down, but he will never build up. If he set himself to put up a building without a plan, he will spoil much material and labor in vain. But man forms the plan of his own building. Who, then, formed that of the bee's. Not the bee itself, for it lacks intelligence. To say nothing of the incontestable proofs of this witnessed and narrated by Fabre, there is the consideration, that, if the bee, out of its own head, made the plan of its hive, it could make other plans as well. And one of the very first things we should expect it to do would be to contrive some means of saving its honey from predatory man. The bee, then, is not the architect of its own hive. Nor does it learn the art of building, but is a builder by instinct, or native predisposition. Who, then, planned the bee's hive and implanted in the bee's brain the instinct for building? Only some intelligence could have done so, for plan and purpose necessarily imply intelligence. Now the living creatures below man, possessing sense and instinct, lack intelligence. It remains that the Architect of the universe put the plan in the brain of the first bee, and that every bee since the first does but instinctively carry out the plan; even as men who are not themselves able to make plans carry out the plans of others.

It does seem, then, that at this point the theory of evolution breaks down completely. But there are many other evidences of its inadequacy to account for the origin of species. The bee has a host of poor relations that live upon its riches. The saying of Virgil, *So you, O ye bees, make honey, not for yourselves*, bears a wider and deeper meaning

than even he was aware of. This is revealed in one of Fabre's fascinating chapters, "The Tribulations of the Mason-bee."<sup>9</sup> The path of the laborious gatherer and hoarder of honey is beset with parasites. "There are some ten of them plotting the ruin of the peaceable and industrious Bee," says this "incomparable observer," as Darwin termed him; "and I do not know them all."<sup>10</sup> Of the ten two hold for us a special interest, a species of wasp known to naturalists as *Sapyga punctata*, and the leucospis, which belongs to the Chalcidid family. Let us first consider the case of the latter.

This parasite, in the words of the author, is "a magnificent insect, striped black and yellow, with an abdomen rounded at the end and hollowed out, as is the back, into a groove to contain a long rapier, as slender as a horsehair, which the creature unsheathes and drives through the mortar right into the cell where it proposes to establish its egg."<sup>11</sup> It may be needful to state that the Mason-bees studied by Fabre build their cells out of the fine dust of the macadamized roads of France, mixing it with their saliva to make mortar. These cells, of which as many as fifteen are sometimes built by the bee, are filled about two-thirds full of honey. Then an egg is deposited in each, the hole is carefully plugged, and the entire nest is plastered over with cement, which one can scarce pierce with a knife, so hard is it. About the first week in July, in the hottest part of the day, along comes the leucospis, and begins its work, thus graphically described by our

<sup>9</sup> Ib. ch. 10.

<sup>10</sup> Ib. p. 254.

<sup>11</sup> Ib. p. 278.

author:

"The insect slowly and awkwardly explores the nest. It feels the surface with its antennae, which are bent at a right angle after the first joint. Then, motionless, with bent head, it seems to meditate and debate within itself on the fitness of the spot. Is it here or somewhere else that the coveted larva lies? There is nothing outside, absolutely nothing, to tell us. It is a stony expanse, bumpy yet very uniform in appearance, for the cells have disappeared under a layer of plaster, a work of public interest to which the whole swarm devotes its last days. If I myself, with my long experience, had to decide upon the suitable joint, even if I were at liberty to make use of a lens for examining the mortar grain by grain and to auscultate the surface in order to gather information from the sound emitted, I should decline the job, persuaded in advance that I should fail nine times out of ten and only succeed by chance." But the leucospis never once fails. It pierces the cell of the bee, though it sometimes takes three hours at its task, and deposits its egg which hatches out in about a fortnight. It is the time when "the bee's grub, all plump and fat and greasy, has finished its provisions and spun its cocoon wherein to sleep the slumber akin to death, the necessary preparation for its future life. Soon on the sleeper's body lies a nascent grub which feasts in all security on the luscious fare." It is the larva of the leucospis. "Like his prototype the Anthrax, the Leucospis does not eat the Chalcidoma-grub, that is to say, he does not break it up into mouthfuls; he drains it without opening

<sup>48</sup> Ib. p. 263.

it and digging into its vitals. In him again we see exemplified that marvellous art which consists in feeding on the victim without killing it until the meal is over, so as always to have a portion of fresh meat. With its mouth assiduously applied to the unhappy creature's skin, the lethal grub fills itself and waxes fat, while the fostering larva collapses and shrivels, retaining just enough life, however, to resist decomposition." And now let us see what bearing all this has on the matter in hand.

Supposing the evolution of species, all the parasites of the bee must have been evolved after it. They live on the bee; they could not rear their young without the bee. Were all the bees in the world to perish, all the parasites would perish, too. Whence, then, came they, in the first instance? An accredited exponent of the theory of evolution, already cited, tells us they came "from antecedent kinds, which were different, by a process of natural generation." The first leucospis, therefore, came from the egg of an insect which did not possess its specific characteristics. The supposed ancestor of the leucospis did not introduce its egg into the cement cell of the Mason-bee by the arduous process of piercing it with an ovipositor. When it began to rear its family, the Mason-bee did not yet exist. Being of a species that was different, it was not equipped with a probe or ovipositor, which would have been useless to it, and which is the special characteristic of the leucospis. Its larva must have fed on food other than the grub of the bee, seeing that this was not yet available, and in any case required a kind of apparatus for sucking it which is peculiar to the leucospis.

Let us go back in thought to the moment when the first leucospis that ever appeared on the earth was still in the germ. As we have seen, on the hypothesis of evolution, it came into being by a process of natural generation, and a germ is ever the starting-point of that process. All the characteristics of the species must have been wrapped up in that germ, awaiting their unfolding: (1) a probe or ovipositor; (2) an egg capable of developing into a larva armed with "piercers of exceeding sharpness and so short that they cannot hurt anything beyond the skin," to enable it to suck, without killing, the fat grub of the bee; (3) an egg which will hatch just in time to get at the bee's grub while it is still immature, soft and juicy; (4) an unerring instinct for seeking out the bee's nest and piercing it just in the right spot and just at the time when the bee's grub is fit to be food for the leucospis's larva; (5) finally, incisors for cutting its way out of the cement cell of the Mason-bee, and the instinct to use them aright.

We are told that the new species comes "from an antecedent one, which was different, by a process of natural generation." And if you exclude the immediate agency of the Creator, this is the only way it could come; for all species are propagated by a process of natural generation. The proximate term of this generation—proximate, not final—is a germ or egg. Now the egg from which the first leucospis was evolved must needs have been that of a species which was different—this by the very terms of the question, for we are seeking the origin of a leucospis before which none existed, and, of course, that which does not exist can-

not have an egg! Here, then, is what the transformist asks us to believe: At a certain stage in natural history, to be precise, just when the first leucospis came into being, the egg of an antecedent species, which was different, suddenly became endowed with the very marvellous characteristics enumerated above! Surely this is in flat contradiction to the law of causation, and even to the principle of contradiction; for the egg in question could not both be the egg of a leucospis and the egg of a different species at the same time.

And this is not all. The antecedent species which was different, must have been able to insert its egg into the cement cell of the Mason-bee; for every leucospis since the first sprang from an egg which was so inserted, and fed and waxed strong on the Mason-bee's grub. That species, therefore, must have become suddenly equipped with a probe or ovipositor and endowed with the instinct of using it rightly. Such happenings belong to the realm of magic, not to that of sober science.

And now a word about the other parasite of the bee, *Sapyga punctata*. This creature lays its egg on the free end of the bee's egg. It opens before the latter, and the tiny grub, as soon as born, begins to drain the rival egg, which in twenty-four hours is but a crumpled bit of skin. Then it feeds upon the honey at its leisure. "Now where are we to class this Wasp," says our author, "a true parasite in the strict sense of the word, that is to say, a consumer of others' provisions? Her general appearance and her structure make it clear to any eye more or less familiar with entomological shapes that she

belongs to a species akin to that of the Scoliae. Moreover, the masters of classification, so scrupulous in their comparison of characteristics, agree in placing the Sapygae immediately after the Scoliae and a little before the Mutillae.

"The Scoliae feed their grubs on prey; so do the Mutillae. The Osmia's [bee's] parasite, therefore, if it really derives from a transformed ancestor, is descended from a flesh-eater, though it is now an eater of honey. The Wolf does more than become a Sheep; he turns himself into a sweet-tooth.

"'You will never get an apple-tree out of an acorn,' Franklin tells us, with that homely common sense of his.

"In this case the passion for jam must have sprung from a love of venison. Any theory might well be deficient in balance when it leads to such vagaries as this."

And the change of menu is but the least of the difficulties in the way of transformism, as has been pointed out. A change of diet is quite conceivable, given certain conditions. But a sudden and radical change in specific faculties and instincts—this is what the transformist must postulate, and this Nature knows nothing of, and bars by her law of conformity to type.

Darwin's formula, "Infinitesimal steps in gigantic periods of time," does not fit the facts, and cannot be made to fit them. Paleontology, or the science of fossil remains, tells us of numberless extinct species, but reveals no transitional forms, no species in the making. Moreover, in the case of the bee and its parasites, had they come into existence by a pro-



cess of evolution, the transition from species that neither made honey nor fed upon honey would have had to be sudden, for the young of the bee and the young of the bee's parasites have depended on honey for their very existence from the first.

I have said that the evolutionist must assume that the bee will in process of time be transformed into an organism specifically unlike itself. If evolution is the law of nature, and all species of living organisms have come into being from antecedent species that were different, the law must continue in operation. So long as nature exists, nature's laws must remain in force. Once you put down evolution as the law of living organisms, you cannot have as much or as little of it as you like. To say that pre-existing species were subject to the law, but that existing species are no longer subject to it, is to make nature subservient to the exigencies of theory. It is to play fast and loose with nature and nature's laws.

Note also that if the theory of evolution fails to account for the existence of a given species, such as the bee or the wasp that feeds upon its larva, it fails absolutely. The theory is that every species of living organism now on the earth is derived from one or two, or at most a few, aboriginal forms, the higher from the lower in an ascending scale. Plainly, then, the line of descent must be kept unbroken. If you drive a wedge through it at one point, the whole line crumples and goes to pieces—more surely and more completely than would the line of battle on either side of the Western Front have done in the Great War now happily ended, did it meet with similar disaster.

We read in the Book of Genesis that in the beginning "God made the beast of the earth after its kind, and the cattle after their kind, and everything that creepeth upon the ground after its kind"—ch. I, v. 25. This is God's truth. True science, based upon observation and experiment, and "clear" as Fabre puts it, "of the incubus of theory," will evermore confirm it. He "who made a weight for the winds and weighed the waters in measure, gave a law to the rains and appointed a way to the sounding storms" (Job. 28: 25-26)—He, too, gave each species its characteristic faculties and implanted in its nature the instincts which unerringly guide it in the performance of its allotted work.

And these wonderful instincts, so sure within their own narrow sphere, so blind and utterly futile outside of it, serve to keep the species evermore employed in the lowly tasks once for all assigned to it. They bar effectually the way of evolution, and enforce the law of conformity to type. What if we are not able to define exactly the limits of species? What if these limits have been narrowed unduly, and there have been for species mistaken what were only varieties? That does but show the limitations of human knowledge; it does not touch the great truth laid down in Genesis, that God made every living creature after its kind. To each species that He made He gave a law that it should increase and multiply, that is to say, He implanted in each species the instinct to propagate itself. And this law remains the best test of a real species—capacity in individuals of interbreeding indefinitely. Man in certain cases obtains crosses even between

"good" species, but the process is artificial, and Nature bans it by cursing the hybrid form with sterility, compelling reversion to one or other of the original forms.

So careful of the type she seems,  
So careless of the single life.

Thus the poet, and truly, for the type endures. "The individual withers," as the same poet has it, "and the race is more and more." Each species is built upon a type, which corresponds to the archetypal idea in the Divine Mind. God fashioned His creatures after the pattern or plan of them that pre-existed in Him from eternity, even as man, made in God's image and likeness, fashions every work of his hands after a pattern or plan. And as conformity to plan is the law that man imposes upon his work, conformity to type is the law that God imposed upon every living creature. Hence it is that the lowest forms of living organisms are still with us. They still survive, exemplifying the true law of "the survival of the fittest"—those being fittest that do conform to type.

The law of conformity to type is strikingly confirmed by the persistence of these primitive forms. From seventeen to thirty-five per cent. of the species of shellfish in the Miocene period, according to Lyell, are identical with those now existing, and from sixty to eighty per cent. of those in the later Pliocene beds. And plant life is older than animal life, yet species belonging to the lowest order in the vegetable world endure, though here is supposed to have been the starting-point of trans-

formism. If all life has come from a few primitive forms in the vegetable kingdom, how have the low types survived?

"And God said: Let the earth bring forth the green herb, and such as may seed, and the fruit-tree yielding fruit after its kind, which may have seed in itself upon the earth; and it was so"—Gen. I:II. If men do not gather grapes from thorns nor figs from thistles, it is because from the beginning each species of plant was made to bear fruit after its kind, and that the seed which is therein continues to reproduce the same kind of plant evermore. Neither in the Book of Nature nor in the Book of Genesis, each in its way God's own Book, has the doctrine of transformism any real foundation. Time was when reason ruled natural science and scientific studies. But ever since Darwin wrote his *Origin of Species*, the "scientific imagination" has been given a free rein. Phaethon, to borrow Newman's splendid figure, got into the chariot of the Sun, and the adherents of the old regime, standing aghast, could but look on, and watch him down the steep of heaven.

\* \* \*

By way of epilogue, one may essay an answer to a question which has perhaps been formulating itself in the reader's mind. Why did God make so many parasites equipped with special faculties to prey upon the bee? It is not for us to assign a reason for what God does. "O the depth of the riches both of the wisdom and knowledge of God; how incomprehensible are His judgments and unsearchable His ways!" But we can conceive of

some reasons in this case. First of all, it was needful to keep the little creature from increasing and multiplying unduly. Left entirely to its own devices, it would soon become a nuisance and a pest. Then, it was in keeping with the bounteous purpose of God that the bee's poor relations should have a chance of enjoying the sweets of existence during the little day of life that is theirs. And this suggests another reason. Here is a valuable moral lesson for the rich, that they should gladly share their riches with the poor. He who made the bee and the bee's parasites has said, "Wo to the rich." if they fail to do this.

## PART II.

## Reason and Instinct

It will be well to set forth in detail certain of the facts which Fabre has established under this head. First of all, he shows that within its own narrow sphere, instinct equals and even surpasses reason in cleverness. Of this he brings forward numberless instances, but one must suffice. The banded *Epeira*, a species of spider, constructs a telegraph line between her cabin and the bush where she snares her prey. "To save herself from keeping a close watch that would degenerate into drudgery and to remain alive to events even when resting with her back turned on the net, the ambushed spider always has her foot on the telegraph-wire. . . . Clutching her telephone-wire with a toe, the spider listens with her leg; she perceives the innermost vibrations; she distinguishes between the vibrations caused by a prisoner and the mere shaking caused by the wind."<sup>1</sup>

Side by side with this cleverness there exists a stupidity truly abysmal. The *Lycosa*, another species of spider, carries her bag of eggs attached to her with a spinneret. She never leaves it day or night, sleeping or waking. She resists furiously if anyone tries to take it from her. But she is quite incapable of distinguishing her own eggs from those of another spider, or even from a bit of life-

---

<sup>1</sup> "The Wonders of Instinct," pp. 203-205.

less matter. "After depriving the *Lycosa* of her eggs, I throw her a bit of cork, roughly polished with a file, and of the same size as the stolen pill. She accepts the corky substance, so different from the silk purse, without a murmur. One would have thought that she would have recognized her mistake with those eight eyes of hers which gleam like precious stones. The silly creature pays no attention. Lovingly she embraces the cork ball, fondles it with her palpi, fastens it to her spinnerets, and thenceforth drags it after her as though she were dragging her own bag."<sup>2</sup>

Even more remarkable is the Pine Processionary, to which our author devotes a whole chapter. Certain caterpillars that gnaw the pine, move in a procession, one following the other in a regular string, with not an empty space between them. Where the first goes, all the others go. A silken cord laid along the way leads them from the nest to the pinery. Fabre manages to produce with this cord a circuit. For seven times twenty-four hours the caterpillars "in distress, starved shelterless, chilled with cold at night, cling obstinately to the silk ribbon covered hundreds of times, because they lack the rudimentary glimmers of reason which would advise them to abandon it. . . . The school most highly honored today is anxious to find the origin of reason in the dregs of the animal kingdom. Let me call its attention to the Pine Processionary."<sup>3</sup>

Intelligence is elastic; instinct has its limitations rigidly fixed. Once outside its own sphere, it is

---

<sup>2</sup> *Ib.* p. 161.

<sup>3</sup> *Ib.* p. 125-147.

helpless. "The instincts have a calendar of their own. At the given hour suddenly they awaken; as suddenly afterwards they fall asleep. The ingenious become incompetent when the prescribed period is ended."<sup>4</sup> The spider of the waste lands furnishes an instance in point. "Mould a burrow roughly representing her own, and she enters it forthwith. In course of time a bastion is erected around the orifice; the top of the gallery is cemented with silk. . . . But place the *Lycosa* on the surface of the ground without first shaping a burrow. . . . Demoralized by the absence of an ambush, the *Lycosa* hardly vouchsafes a glance at the game which I serve up. The crickets pass within her reach in vain; most often she scorns them. She slowly wastes away with fasting and boredom. At length she dies.

\* \* \*

Because the craft which you were wont to ply is forgotten; because the days of patient digging are past and your poor brain is unable to work back. To do a second time what has been done already is beyond your wit. For all your meditative air, you cannot solve the problem of how to reconstruct that which is vanished and gone."<sup>5</sup>

That is precisely where instinct fails. It doesn't solve any problems. Every problem that the animal is called upon to solve was solved for it once for all before it was born. Instinct in itself is a blind impulse—as blind as the force which drives the steam-engine or the electric motor under the guiding hand of man. Fabre makes a rent in the web of the House Spider. She goes on with her work

---

<sup>4</sup> "The Life of the Spider," pp. 147-8.



as if nothing had happened. "Neither weavers nor spinners know how to repair their work. Those wonderful manufacturers of silk-stuffs lack the least glimmer of that sacred lamp, reason, which enables the stupidest of darning-women to mend the heel of an old stocking. The office of inspector of Spiders' webs would have its uses even if it merely succeeded in ridding us of a mistaken and mischievous idea."<sup>6</sup>

Take again the case of the Burying-Beetles. "It is absolute nonsense to speak of their first preparing the grave to which the body (of their prey) will afterwards be carted. To excavate the soil, our grave-diggers must feel the weight of their dead on their backs. They work only when stimulated by the contact of its fur. Never, never in this world do they venture to dig a grave unless the body to be buried already occupies the site of the cavity. This is absolutely confirmed by my two and a half months of daily observations."<sup>7</sup>

Instinct is an inborn predisposition. It is never acquired. A longish extract from our author, which has, besides, an interest of its own, will best serve to show this:

"To the philosophical entomologists I have something else to say; I have to call their attention to the consummate knowledge of the insect-killers, which vies with that of the paralyzers. I speak of the insect-killers in the plural, for the Tarantula must share her art with a host of other Spiders. These insect-killers who live on their prey, strike the game dead instantaneously by stinging the

<sup>6</sup> *Ib.* (p. 271).

<sup>7</sup> *The Wonders of Instinct* (pp. 86-87).

nerve-centers of the neck; the paralyzers, on the other hand, who wish to keep the food fresh for their larvae, destroy the power of movement by stinging the game in the other nerve-centers. Both of them attack the nervous chain, but they select the point according to the object to be attained. If death be desired, sudden death, free from danger to the huntress, the insect is attacked in the neck; if merely paralysis be required, the neck is respected, and the lower segments—sometimes one alone, sometimes all or nearly all, according to the special organization of the victim—receive the dagger thrust.

“Even the paralyzers, at least some of them, are acquainted with the immense vital importance of the nerve-centers of the neck. We have seen the Hairy *Amophila* munching the caterpillar’s brain, the languedocian *Sphex* munching the brain of the *Ephippigera*, with the object of inducing a passing torpor. But they simply squeeze the brain, and do even this with a wise discretion; they are careful not to drive their sting into the fundamental center of life; not one of them ever thinks of doing so, for the result would be a corpse which the larva would despise. The spider, on the other hand, inserts her double disk there and there alone; any where else it would inflict a wound likely to increase resistance through irritation. She wants a venison for consumption without delay, and brutally thrusts into the spot which the others so conscientiously respect.

“If the instinct of these scientific murderers is not, in both cases, an inborn predisposition, inseparable from the animal, but an acquired habit,

then I rack my brain in vain to understand how that habit could have been acquired. Shroud these facts in theoretic mists as much as you will, you shall never succeed in veiling the glaring evidence which they afford of a pre-established order of things."\*

The incapacity of insects to learn anything new Fabre insists upon over and over again. "The experience of centuries," he writes ("Social Life in the Insect World," p. 54), "has taught the Cigale nothing. With her excellent eyesight she must be able to perceive these terrible sappers as they hover about her, meditating their crime. Too peaceable giantess! If you see them why do you not seize them in your talons, crush the pigmies at their work, so that you may proceed with your travail in security? But no, you will leave them untouched; you cannot modify your instincts, even to alleviate your maternal misfortunes."

In a later chapter of the same book he tells us of the imbecility of the bee in the presence of its hunter, Philanthus. "I have seen it side by side with Philanthus on the same flower; assassin and future victim were drinking from the same goblet. I have seen it stupidly coming to inquire what the stranger might be, as the latter crouched watching on the floor. When the murderer springs it is usually upon some bee that is passing before her, and throws itself, so to speak, into her clutches, either thoughtlessly or through curiosity. There is no frantic terror, no sign of anxiety, no attempt to escape. How is it that the experience of centuries, which is said to teach so much to the lower creatures, has not taught the bee even the beginning

\* "The Life of the Spider," pp. 75-77.

of apine wisdom; a deep-rooted horror of the Philanthus? Does the bee count upon its sting? But the unhappy creature is no fencer; it thrusts without method, at random. . . . The bee is capable of withstanding its adversary; it can, with a thrust of its envenomed needle, kill the would-be killer. That it does not defend itself more skilfully when it falls into the hands of its enemy is due to ignorance of fencing, not to the weakness of the arm. And here again arises, more insistently than before, the question I asked but now: how is it that the Philanthus has learned for purposes of attack what the bee has not learned for purposes of defence? To this difficulty I see only one reply: the one knows without having learned, and the other does not know, being incapable of learning." (pp. 157-159)

For further passages bearing on the same subject I would refer the reader to "The Life of the Spider," pp. 392-400; and "The Wonders of Instinct," pp. 49-64 and pp. 82-92. In this last place, the author, addressing the Burying-Beetle, says: "If you had to learn it by experience, to think it out before practising it, your race would have disappeared, killed by the hesitations of its apprenticeship, for the spots fertile in Moles, Frogs, Lizards, and other victuals to your taste are usually grass-covered."

Another reason why instinct cannot be acquired habit is its uniformity. Acquired habits vary, but instinct is the self-same in every member of the species. Nor can one species inherit its instinct from another, for its instinct is peculiar to itself,

and essentially different from that of any other species. But this point will be dealt with more fully later on. In the meantime, let us consider with our author, how instinct cannot be the result of chance. The Eumenes, of the genus wasp, builds its house of stone and mortar. It scrapes the dust off a hard road, mixes it with saliva, and so makes cement. It selects the material for building in a gravel pit, pebbles of varying size. "The insect weighs them, so to say, measures them with the compass of its mandibles, and does not accept them until after recognizing in them the requisite qualities of size and hardness."<sup>9</sup> Here nothing is left to the action of chance.

On the other hand, creatures endowed with this wonderful gift of instinct, have not a glimmer of reason. In the account of his experience with the Burying-Beetles, the author brings this out convincingly.<sup>10</sup> The whole chapter will well repay careful perusal. Animals have not even a rudiment of the faculty of putting this and that together, of drawing inferences, of proceeding from the known to the unknown. Many seeming instances of the exercise of such a faculty have been noted in animals. But it is always a case of man's projecting the processes of his own mind into the brains of those lower creatures. The broad, indisputable fact remains that no species of animal, save man only, makes progress; and progress results from the exercise of reason. True, creatures that are guided by instinct will sometimes vary their mode of do-

---

<sup>9</sup> "The Wonders of Instinct, pp. 209-210.

<sup>10</sup> *Ib.* pp. 82-106.

ing things, and make shift with other material for building when the ordinary material fails them. This, however, does not indicate progress, but is simply the adaptation of means to an end which is characteristic of instinct. In an interesting chapter on "The Economy of Energy," our author traces all such manifestations of instinct to "the general law of economy which seems to govern the whole animal world."<sup>11</sup>

Like all animals, ants completely lack the moral sense. That they are void of feeling we gather from an instance recorded by Fabre. "One morning I watched two harridans, (spiders) fighting out their quarrel on the floor. The loser is laid flat upon her back; the victress, belly to belly with her adversary, clutches her with her legs and prevents her from moving a limb. Both have their poisonfangs wide open, ready to bite without yet daring, so mutually formidable are they. After a certain period of waiting, during which the pair merely exchange threats, the stronger of the two, the one on top, closes her lethal engine, and grinds the head of the prostrate foe. Then she calmly devours the deceased by small mouthfuls. Now what do the youngsters do, while their mother is being eaten? Easily consoled, heedless of the atrocious scene, they climb on the conquerer's back and quietly take their places among the lawful family. The ogress raises no objection, accepts them as her own. She makes a meal of the mother and adopts the orphans."<sup>12</sup>

I will make one more extract. In "The Hunting

---

<sup>11</sup> "Bramble Bees and Others," pp. 213-233.

Wasps," Fabre subjects to a searching criticism the modern theory that instinct is an acquired habit, and, in the light of his own first-hand acquaintance with facts, shows it to be utterly untenable. I quote the concluding paragraphs, referring the reader to the book itself for the whole of his masterly treatment of the subject:

"If, on her side, the Wasp excels in her art, it is because she is born to follow it, because she is endowed not only with tools, but also with the knack of using them. And this gift is original, perfect from the outset; the past has added nothing to it, the future will add nothing to it. As it was, so it is and will be. If you see in it naught but an acquired habit, which heredity hands down and improves, at least explain to us why man, who represents the highest stage in the evolution of your primitive plasma, is deprived of the like privilege. A paltry insect bequeaths its skill to its offspring; and man cannot. What an immense advantage it would be to humanity if we were less liable to see the worker succeeded by the idler, the man of talent by the idiot! Ah, why has not protoplasm, evolving by its own energy from one being into another, reserved until it came to us a little of that wonderful power which it has bestowed so lavishly upon the insects! The answer is that apparently, in this world, cellular evolution is not everything.

"For these among many other reasons, I reject the modern theory of instinct. I see in it no more than an ingenious game in which the armchair naturalist, the man who shapes the world according to his whim, is able to take delight, but in which

the observer, the man grappling with reality, fails to find a serious explanation of anything whatsoever that he sees. In my own surroundings, I notice that those who are most positive in the matter of these difficult questions are those who have seen the least. If they have seen nothing at all, they go to the length of rashness. The others, the timid ones, know more or less what they are talking about. And is it not the same outside my own modest environment?"—Ib. (pp. 385-411).

\* \* \*

The bearing of all this on the origin of species is sufficiently obvious. Man with his intelligence and moral sense could never have been evolved from the brute. Nor could there have been a process of evolution in creatures that are endowed with instinct. This latter point has to be brought out clearly.

Evolution involves the origin of a new species, a new kind of living organism, from a pre-existing species that was different. Now the pre-existing species was possessed of a different set of instincts. We find species differentiated by instincts that are specifically different. Thus the bee has the instinct of making honey and building a hive, and is endowed with appropriate faculties for doing this work. On the other hand, the wasp which preys upon the bee has the instinct of boring a hole into the bee's cell so as to feed its offspring on the bee's honey, and has a set of faculties which enable it to do this. As instinct has but one plan of action, and is incapable of devising new plans, and is therefore absolutely unprogressive and rigidly confined to action within its own narrow sphere, it follows



that the bee could never cease doing what it does and could never hand on to its offspring any other instinct or any other faculties than those that it is possessed of. The same is true of the wasp, and of every other creature which is possessed of instinct and appropriate faculties corresponding to it. The way of evolution is, therefore, barred in every creature endowed with instinct.

Heredity is a fundamental principle in biology. The characteristics of the parent organism are transmitted to the offspring. Notable among these characteristics are the instincts proper to the species. Each species transmits the instincts that are peculiar to itself. Thus the *Chalcidoma*, or mason-bee, transmits the instinct of making a cell of cement and storing it with honey; *Sapyga Punctata*, the instinct of piercing the bee's cell and robbing the bee of its store to furnish food for its own offspring. In virtue of the principle of heredity, identically the same instincts continue to be handed on. But outside of the instincts peculiar to itself, the creature has only its stupidities. In accordance with the principle of heredity, therefore, new instincts can never be evolved; and if not new instincts, not a new species, seeing that each species is possessed of instincts peculiar to itself.

Instinct, though acting on a blind impulse, involves intelligence. It proceeds upon a plan and works to a definite purpose. But the intelligence which instinct involves is not in the creature that possesses the instinct. The bee is not the architect of its own hive, nor does the spider itself devise

---

<sup>12</sup> "The Wonders of Instinct," pp. 167-8.

the web that it spins so cunningly. It does but carry out the plan that is given to it. Whence, then, the plan and purpose discernible in the instincts of each several species? Not from an antecedent species that was different, for each species transmits its own instincts, in accordance with the principle of heredity. Not, therefore, by evolution does instinct come. The intelligence discernible in the work of creatures endowed with instinct is the embodiment of the Supreme Intelligence who made the species upon a plan and for a definite purpose.

Science is built up by observation and experiment. When men leave the sphere of observed fact and enter the region of hypothesis, we have no longer science but learned guesswork. Such is the doctrine of evolution—a scaffolding of hypotheses without any solid foundation in fact. The evolution of species is assumed, not proved. Certain of the assumptions that lie back of it, such as a tendency to vary beyond specific limits, the possession by living organisms of a low grade of intelligence with the consequent capability of indefinite progress, are in open contradiction with the recorded results of scientific research.

Perhaps the greatest service that Fabre has rendered to science lies in his restoring reason to its rightful place. The evidence that he accumulates of the gulf that is fixed between sentient life and rational intelligence is overwhelming. And it all rests on personal observation and experiment extending over several decades of years. His treatment of instinct is especially noteworthy. Again and again in the course of his writings he returns to this subject. Besides numberless minor references

to it, he has whole chapters on it, such as, "The Wisdom of Instinct" and "The Ignorance of Instinct," and "The Modern Theory of Instinct," in "The Hunting Wasps"; "Instinct and Discernment" in "Bramble Bees and Others" (pp. 192-212); "Reflections upon Insect Psychology," in "The Mason Bees" (pp. 158-159). In this last place he speaks of "this instinctive predisposition, which does not leave the insect free to act, and, through that very fact, saves it from error" (p. 189). And again, in "The Life of the Spider," "The Eperia practices higher geometry without knowing or caring. The thing works of itself and takes its impetus from an instinct imposed upon creation from the start." (p. 396). And once more, "I conclude as I began: Instinct knows everything within the narrow paths marked out for it; it knows nothing outside those paths."—"The Hunting Wasps," (p. 211). Most copious in all matters appertaining to instinct is Fabre's monumental work, recently brought out in English, entitled "The Wonders of Instinct."

Reason is the guiding faculty in man; instinct in the animal. Reason determines itself; instinct is pre-determined. Reason starts from data or premises and works to conclusions; instinct goes straight to a practical conclusion, but is helpless in the presence of data. Instinct is blind to the bearing of facts; reason puts this and that together. Instinct acts upon impulse; reason chooses its way. Instinct is one-sided; reason is many-sided, nay, myriad-sided. Instinct is absolutely unprogressive; reason makes progress evermore. Instinct, beyond its own narrow sphere, is stupidity itself; reason reveals wonderful cleverness in every sphere. In-

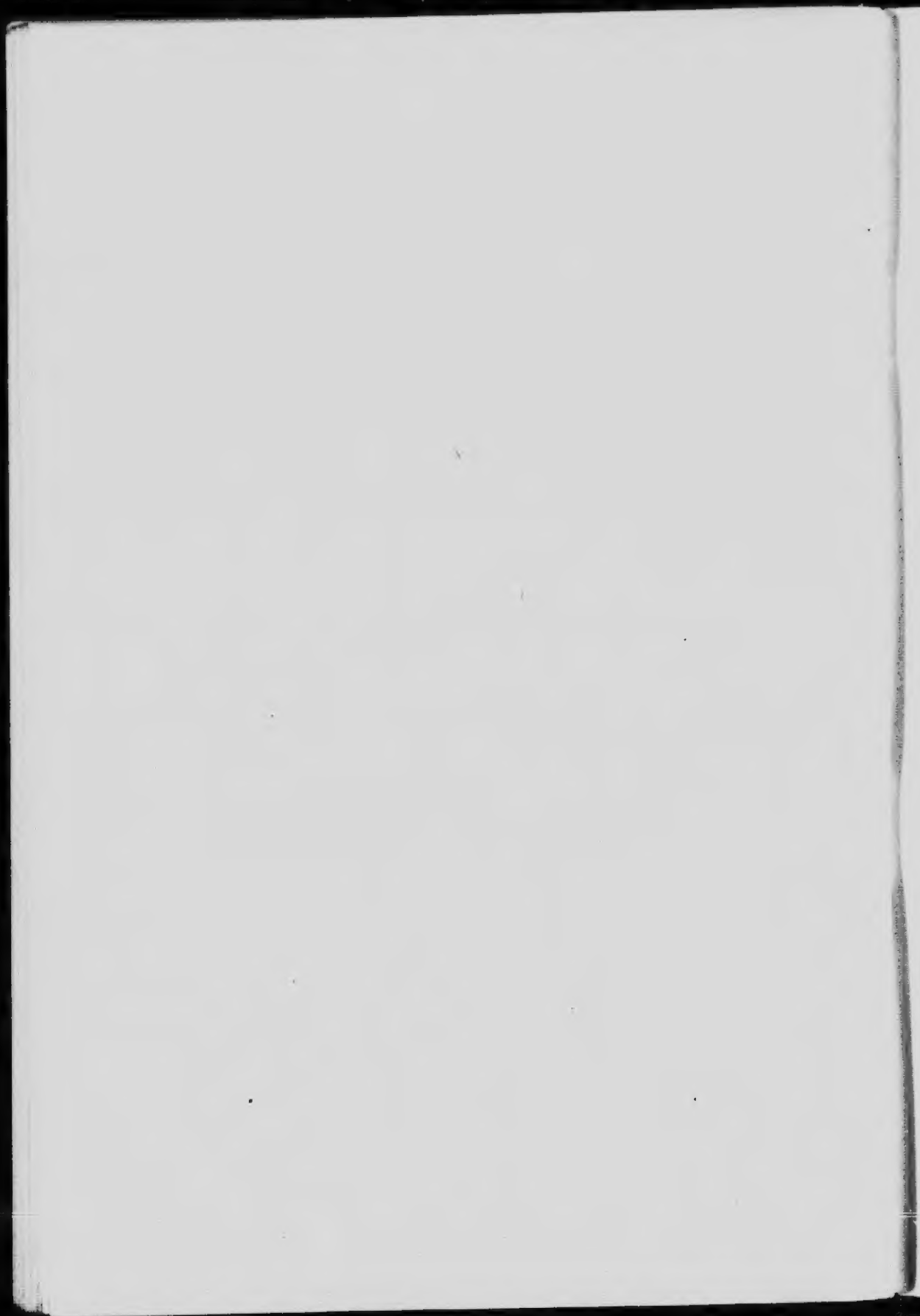
instinct has its limitations rigidly fixed; reason knows no limitations save those that needs must hedge in the finite. Instinct is without perception of right and wrong; reason sees the right and the wrong, and its voice in the domain of conscience is the herald of the eternal law. Reason, the architect, designs and draws up plans; instinct, the lowly worker, forms no plan, and does but carry out the plan given to it. The fundamental difference between reason and instinct is here. Reason is endowed with originality and creative power, while instinct is marked by the very lack of these. Hence stationariness is the lot of every living organism below man. Not one of the creatures

*That nourish a blind life within the brain*

has ever yet taken a single step forward, has ever yet originated anything new. On the other hand, man, by his originality and creative faculty proves himself to have been made in the image and likeness of God. Progress marks his path down through all the ages, progress in the arts, and crafts, and sciences.

*Men my brothers, men the workers, ever reaping something new,  
That which they have done but earnest of the things that they shall do.*


In the beginning, God gave man dominion over the birds of the air, and the fish of the sea, and the beasts of the field. The charter whereby He invested man with this lordship was no other than the Godlike gift of understanding, the faculty of reason. By the exercise of this faculty man holds and extends the lordship given to him from the first, subduing the earth, ruling the wave, essaying and achieving the conquest of the air. And every fresh triumph of his genius is a fresh proof of his kinship with the angels, and a fresh confutation of the Darwinian hypothesis of his descent.




**Books by the Same Author**

**STRAY LEAVES, OR TRACES OF TRAVEL**


"I have enjoyed its sketches of travel immensely, and have only one fault to find with them—they are too short! One wishes for a great deal more of the same easy, graceful, vivid writing."—Christian Reid.




"The whole book is light and airy, and makes interesting reading."—The Brooklyn Tablet.



"If the reader likes a book of travels written as is 'Stray Leaves, or Traces of Travel,' with that touch of elusive charm and that power of expression that brings the scenes described before the mental vision as if vividly as if painted, then the reader will be glad to have this book on a quiet day, an opportune and secluded reading-place, with no companion to interrupt."—Mrs. S. M. O'Malley.



"It is full of interest and charm, the impressions, keen and artistic, of one who was on familiar ground in his wide range of journeys."—The Catholic World.



**THE HOLY HOUSE OF LORETO**

"The book before us cannot be disposed of by any supercilious assumption that 'scholars no longer doubt that the Holy House is a fraud.'"—The Ave Maria.

"Puts a quietus on those gentlemen who thought they had proven that the translation of the Holy House of Loreto was a myth."—The Western Catholic.



"My warmest congratulations on your scholarly and, in my view, successful defence of the beautiful and time honored tradition of the angelic translation of the House of Nazareth."—Cardinal Begin.



### **RELIGIOUS QUESTIONS OF THE DAY** (3 Volumes)

"It is in the firm mastering of these permanent truths—the wisdom, principles, divine and human, the clear insight into their meaning and bearings, together with the practical method of their application to certain subjects now occupying men's minds—it is these qualities that constitute the permanent worth of these essays . . . set forth with the author's characteristic precision, perspicuity, and beauty of diction."—The Ecclesiastical Review.



### **THE SACRIFICE OF THE MASS**

"A second reading has deepened the first impression. I really think you have made a valuable contribution to theological science."—Most Rev. N. MacNeil, Archbishop of Toronto.



"Theologians will find this book luminous and interesting."—The Pittsburg Catholic.

## **THE SYMBOL IN SERMONS**

**Twenty-five Short Sermons on the Apostles' Creed**

"It is lucid and easy in style, concise in arrangement, and magnetic in its erudition."—The Catholic Register.



## **THE SYMBOL OF THE APOSTLES**

**A Vindication of the Apostolic Authorship of the Creed on the Lines of Catholic Tradition**

"A splendid example of critical scholarship."—The Guidon.



"It is a relief to come across a work like the Symbol of the Apostles after the dreary waste of academic discussions that centre about this well-worn Confession of the Christian Faith."—Rt. Rev. Bishop Shahan.



"The author . . . . builds up a new defence too solid and strong for the artillery of historical criticism."—Rev. Dr. Campbell.